Knapp. (H.)

BLINDNESS FROM ISCHÆMIA RETINÆ IN HOOPING-COUGH.

By H. KNAPP.

BLINDNESS is a very rare symptom of hooping-cough. When, on the occasion of a case of that kind, I asked some of my New York colleagues about its occurrence, Prof. LOOMIS told me that blindness in hooping-cough had been observed, but almost exclusively in children, who afterward died from lobular pneumonia. According to that, blindness in hooping-cough would be an ominous symptom. Its cause and nature seem to be unknown. The case which came under my observation, threw some light upon the intra-ocular conditions of this affection, but, unfortunately, confirmed the remark of Dr. Loomis.

Toward the end of the winter of 1874 to 1875, Dr. D. M. CORY, of New York, kindly requested me to see a patient of his, an emaciated, highly-excitable boy of 3 years of age, who had been suffering from a severe hooping-cough for about six weeks. Two days previously, his parents had noticed that the boy, who formerly enjoyed excellent sight, and whose condition had not changed during the last week, complained of the darkness in his room, which was lighted as before, did not take hold of the objects around him as he used to do, in short, that he could not see any more. On examination I could confirm this fact. The eyes did not follow a candle-light, and the boy was unable to tell where the window was. Both pupils, however, responded promptly to changes of light. The eyes showed neither hyperæmia, nor ecchymoses, nor any abnormity. Their tension and mobility were normal. With the ophthalmoscope I found the media clear, the background luminous, no hemorrhages of any kind, but, on the contrary, the marked picture of *retinal ischæmia*. Both optic discs were white. In the left eye, only the main branches of the arteries were recognizable, and they were as thin as fine threads; in the right eye I could discern no arteries at all. The veins in both eyes were scant and thin, more so in the right than in the left. I thought that the ischæmia was possibly caused by a hemorrhagic effusion into the sheaths

of the optic nerves, or, more probably, by the general anæmia and the weak cardiac action of the reduced patient. Therapeutically I proposed nutritious diet, with some coffee and tea, and champagne diluted with water as a restorative beverage. If, within 24 hours, the condition of his eyes should not improve, I would suggest paracentesis of the anterior chamber, with the view that, by reduction of the extra-vascular pressure, the resistance in the retinal arteries be so diminished as to be overcome by the weakened propulsive force of the heart, which then would be sufficient again to throw blood into the retina. The affection, however, being an extraordinary one, I requested to be favored with the opinion and advice of the one or the other of my brother oculists. The little patient was then examined by Profs. NOYES and ROOSA, of this city, who both concurred in my view of the case. The child's condition having undergone no change during 24 hours, I performed paracentesis of both anterior chambers, kindly assisted by Drs. Cory and Noyes. The patient being etherized, the anterior chambers were almost totally emptied. The little operations were completed without any disturbance, in particular without procidence of iris into the small corneal wound, which was at a distance of about three millimeters from the margin. No symptoms of irritation ensued. The next day I found both pupils promptly responsive to light, and the retinal vessels better filled. Arteries had become visible in both eyes; the vessels were more numerous, and the optic discs less white than the day before. The patient had seen the light of the window several times after the operation, and had correctly pointed to the window. From day to day the retinal vessels became thicker and more numerous, and the optic discs less pale, without, however, attaining to the natural standard. The patient recognized the objects around him, and seized them correctly; for instance, of a number of apples he picked out the largest with a sure and direct grasp: sufficient evidence that he was no longer blind. A repetition of the paracentesis, therefore, was not indicated. His general disease, however, lingered between temporary improvements and aggravations, until about six weeks after the operation, he died from lobular pneumonia.

Disturbances of vision in hooping-cough, considering the frequent conjunctival ecchymoses, will naturally lead us to suspect intra-ocular hemorrhage. Nothing of this, however, was seen in the case just described. Though it is not justifiable to draw general conclusions from an isolated observation, yet the publication of the case under consideration does not seem to be without some value, as the reader may remember it on similar occasions.

The autopsy being refused, the question remained undecided whether the retinal ischæmia had to be referred to the reduction of the propulsive force of the heart, or to an effusion into the subvaginal cavity of the optic nerve pressing upon the nerve and the central retinal artery. The latter, less probable supposition I mention on account of the frequent external hemorrhages in hooping-cough. This alternative has no influence on the therapeutical problem. In the one as in the other case it is certainly rational to perform paracentesis of the anterior chamber, according to the principles laid down in the history of the case described above. These principles, to my mind, were first made known by ALFRED GRAEFE. The operation as such was successful in the above case, and, therefore, furnishes a valuable observation additional to the two cases of ischæmia retinæ, in which R. SECONDI and AUGUSTUS ROTHMUND performed paracentesis of the anterior chamber with good success. Once before I had an opportunity of making paracentesis of the anterior chamber for ischæmia retinæ in a boy of about 10 years of age, who had suffered for a longer time from excessive general anæmia, and had become blind two weeks previous to the operation. Though the pupils responded to light, and the evacuation of the anterior chamber was repeated several times, the vision did not return.

The subject of ischæmia retinæ still being a mooted question, the following *statement of the incident literature* will be of interest. I owe it to the kindness of Prof. Mauthner, the foregoing observations having been written at the bedside of my father, in a place where medical literature was inaccessible to me.

1861. ALFRED GRAEFE. Ischæmia Retinæ. *Graefe's Archives*, viii., 1, p. 143.—Iridectomy was successfully made on one eye; the other eye, after paracentesis had failed, was likewise cured by iridectomy.

1864. SECONDI, R. Caso di amaurosi per ischæmia della retina da atrofia di cuore, guarito colla paracentesi della camera anteriore.—*Turini.*

1865. HEDDÆUS. Ischæmia Retinæ, with secondary atrophy of the optic nerve; *Zeh. Klin. Monatsblätter*, 1865, p. 283.—Heddæus regrets not having performed iridectomy. Paracentesis was not made either. S. had recovered to $\frac{20}{40}$.

1866. ROTHMUND, A. Ischæmia Retinæ. *Ibidem*, p. 106. Two cases cured by paracentesis.

1866. V. GRAEFE. On Neuro-retinitis and certain cases of fulminant blindness. *Arch.*, xii., 2, p. 114, etc., p. 144: "In these cases (of ischæmia) a continuous circulation, as far as my experience goes, remaining obvious, I cannot account for the total abolition of the function by the sole fact that the supply of blood is limited which, the vessels being pervious, cannot be more than moderate. V. Graefe cites the integrity of the vision in the algid stage of cholera, in which there is ischæmia of the highest degree. He thinks that a bilateral retrobulbar neuritis is possible." In Alfred Graefe's case, slight alterations were not wanting, though, perhaps, disappearing, the margins of the optic discs being somewhat ill-defined.

1867. V. STELLWAG (3d edition of Text-book) advocates retrobulbar neuritis in such cases, but in the fourth edition, 1870, he explains them by a spasm of the blood-vessels.

1868. MAUTHNER, L. *Ophthalmoscopie. Wien*, p. 347. Literature. Secondi's case, unquestionably, is one of neuro-retinitis. In the case of Heddæus, with diminished frequency of the pulse, arterial pulsation, as in incipient syncope, is alleged to have been present.

Totally unexplainable is the existence of simple ischæmia, when (Rothmund) *the pulse is full*, and the sounds of the heart are normal. On the other hand, considering V. Graefe's opinion, the successful treatment of these cases by iridectomy and paracentesis is surprising.